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An Automated Method for Forecasting Daily Aviator-Training Resource Requirements

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) This research note discusses a topic important for aviation training. Currently, forecasts of aviation training resource requirements are produced manually, and frequently out of date. An automated method for producing training resource requirement forecasts was developed for the AH-1S Aviator Qualification Course, the Methods of Instruction Course, and the Instructor Pilot Course. The method employs a computer matrix to store data on determinants of resource requirements such as student load, class frequency, and phase of training. Formulas to calculate requirements from these determinants were developed, and a computer application to automate the calculation of the requirements was produced. The method described herein is applicable to other Army Aviator Courses and may be modified to apply to any resource-intensive Army course.					
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AN AUTOMATED METHOD FOR FORECASTING
DAILY AVIATOR-TRAINING RESOURCE REQUIREMENTS

CONTENTS

	Page
INTRODUCTION.....	1
Background.....	1
Requirement for Forecast Program.....	1
Current Management of Resource Shortfalls.....	2
Effects of Current Resource Management.....	2
Objective.....	3
PROCEDURE.....	3
Analysis.....	3
Examine Current Practice for Forecasting Resource Requirements.....	3
Extract Data from Applicable Training Publications.....	4
Determine Resource Requirements to be Calculated.....	4
Establish Relationships Among Input Data and IP Requirements.....	4
Establish Relationships Among Input Data and Aircraft Requirements.....	5
Design.....	6
Establish Structure of Forecast Matrix.....	6
Select Software.....	6
Select Hardware.....	8
Development.....	8
Create Forecast Matrix.....	8
Expand Forecast Matrix.....	8
Implementation.....	10
Employ Forecast Matrix.....	10
Verify Forecast Matrix.....	10
DISCUSSION.....	12
Use of Resource Forecasting Method.....	12
Alternative Uses.....	12
Applicability to POI Changes.....	12
Applicability to Other Courses.....	12

CONTENTS (Continued)

	Page
Enhancements.....	14
Summary.....	14
REFERENCES.....	15

TABLES

Table 1. Matrix Entries for 26 May 1987.....	7
2. Matrix Entries for 28 May 1987.....	9
3. Matrix Entries for 29 May 1987.....	11
4. Matrix Entries for 27 May 1987.....	13

AN AUTOMATED METHOD FOR FORECASTING AVIATOR-TRAINING RESOURCE REQUIREMENTS¹

Background

The United States Army Aviation Center (USAAVNC), Fort Rucker, Alabama currently conducts three aviator training courses in the AH-1S (Cobra) as follows:

- o The Aviator Qualification Course (AQC)
- o The Methods of Instruction (MOI) Course
- o The Instructor Pilot Course (IPC)

The AQC qualifies the aviators in the AH-1S and prepares them for combat missions in the aircraft. The course spans 32 training days and includes 28 training flights for a total of 36 flight syllabus hours, 33 of which are flown in the aircraft and 3 of which are flown in the AH-1S simulator.

The IPC and MOI courses are intended for aviators already qualified in the AH-1 and prepares them for AH-1S instructional duties. Both the IPC and the MOI courses span 34 training days with new classes being introduced every 28 training days. IPC classes consist of 6 to 8 students; MOI class load varies from 1 to 16 students.

Requirement for Forecast Program

All AQC, IPC, and MOI classes simultaneously compete for flightline resources from a common pool of available Instructor Pilots (IPs), AH-1S aircraft without weapons systems (slicks), and AH-1S aircraft with weapons systems (gunships). Frequently as many as five classes compete for the use of available aircraft or IPs. Under these conditions, as many as 18 slicks, 30 gunships and 54 IPs are needed to support training requirements. The total resource pool, however, contains only 26 slicks, 24 gunships and 41 IPs.

¹ The authors thank LTC Alvin Cobb, Commander, 7th ATB; MAJ William Zink, Commander, A Company, 7th ATB; and CW4 Geary Younkin, Operations Officer, A Company, 7th ATB, for their support and contributions to this project.

Current management of resource shortfalls. When an insufficient quantity of aircraft or IPs is available for a given training day, management adjusts training to accommodate the resource shortage. Some possible courses of action are:

- o Increase the student:IP ratio from the ideal 2:1 level to 3:1 or more.
- o Cancel classes for some students and make up the lost time during weekends.
- o Allow students to graduate without having received all the programmed flight training hours.
- o Allow IP duties to be assumed by management.

Effects of current resource management. None of the above actions are desirable. Each results in either reduced student flight time or an increase in training costs.

Increasing the student:IP ratio severely reduces each student's flight time. Aircraft time is normally allocated in 3 hr blocks with 2 students each receiving 1.5 hr of the instruction period block. A student:IP ratio of 3:1 leaves each student with only 1 hr of instruction or one third less than normal flight time.²

Rescheduling flight training to weekends, the second alternative, raises expenses for the Army because the aircraft maintenance contracts provide for higher aircraft delivery charges on weekends.

Reducing the programmed flight training hours, the third alternative, may result in some graduates completing training without adequate skills to perform mission assignments at field units.

Assumption of IP duties by management, the fourth alternative, is not feasible because management cannot effectively supervise training while delivering flight instruction.

These stopgap actions have been used in part because management has been unable to maintain accurate day-by-day resource needs projections sufficiently far in advance. A precise, yet simple, method to forecast daily requirements of flight personnel and aircraft necessary to accomplish training

² This flight time reduction is underestimated because increases in the student:IP ratio disproportionately reduce overall air time due to mandatory changeover procedures.

objectives is needed. Such a method would enable flight training managers to prepare for peaks and valleys in resource consumption by:

- o Scheduling staff leave, temporary duty and outside tasking to allow for maximum personnel support on resource intensive training days.
- o Rearranging outside tasking (e.g., AH-1S Air Assault demonstrations) to coincide with less busy training days.
- o Coordinating with the aircraft maintenance contractor to more closely match aircraft availability to changes in resource requirements.

Objective

The objective of the resource forecast matrix is to provide training managers with a simple and easily used method to rapidly determine forecasts of daily training requirements.

PROCEDURE

Analysis

Examine current practice for forecasting resource requirements. Management currently determines AQC, IPC and MOI resource requirements by manually drafting a 5 week timetable of anticipated course needs as specified in the program of instruction (POI). This timetable resembles a calendar with handwritten descriptions of daily flight periods for all classes in session with personnel assignments and aircraft requirements. Each week, the timetable is routinely updated by deleting the week just completed and adding an additional week. Special updates are performed each time a training change occurs. Examples of events which require special updates are student setbacks and inclement weather days. Update time requirements vary from 1 to 6 hrs depending upon the extent of the change and the experience of the individual performing the update.

Training managers consult this timetable to determine the short term resource needs applicable to a current set of training conditions. Altered training circumstances, for example, the shift of a student to a different class for remediation, necessitates manual calculation of new resource requirements for the student's original class as well as his

new class. These manual procedures were examined in detail to ensure the automated method was fully consistent with them.

Extract data from applicable training publications. The following data items relevant to training requirements were compiled from the most current AQC, MOI, and IPC POIs, flight training guides (FTGs), and master scheduling sheets.

- o Class entry and exit dates
- o Phase of training, by training date, for each class
- o Quantity of students assigned to each daily training period for each class
- o Daily student:IP ratio
- o Amount of AH-1S simulator training syllabus hours required daily
- o Amount of AH-1S aircraft training syllabus hours required daily

Determine resource requirements to be calculated. The following resource requirements are derived quantities and must be calculated from the data items listed above.

- o Quantity of aircraft IPs needed for instruction in the aircraft
- o Quantity of simulator IPs needed for instruction in the simulator
- o Quantity of other IPs needed for other types instruction (e.g., inprocessing, preflight ground school)
- o Quantity of slicks required daily
- o Quantity of gunships required daily

Establish relationships among input data and IP requirements. Relationships among the above listed data and IP requirements were derived from the POI and FTG and verified through interviews with IPs and training managers. Each relationship was then translated into a formula. A description, with examples, of the techniques for developing formulas for calculating IP requirements follows.

The FTG lists daily syllabus flight hours to be performed in the aircraft and daily syllabus flight hours to be performed in the simulator. The quantity of IPs needed for a given

period of student instruction (for a given class) in the aircraft or simulator is based upon the daily syllabus hours requirement. Flight periods with syllabus hours requirements of 0.7 or 0.8 hr occur only in the AH-1S simulator. Flight periods with syllabus hours requirements of 1.3 or 1.5 hr occur only in the aircraft. The amount of syllabus hours for each flight period, therefore, determines whether the IPs are needed for aircraft training or simulator training. A requirement for other IPs occurs on certain, identified training days. The IP requirement (aircraft, simulator, or other) is incorporated in the overall IP requirements formula.

Once the type of IP needed (aircraft, simulator, or other) is established, the quantity of IPs is determined by dividing the quantity of students in the training period by the student:IP ratio. The result is rounded upward to the next integer. For example, if the training period contains 5 students with a student:IP ratio of 2:1, 2 IPs are needed to instruct 4 students, and an additional IP is needed to instruct the fifth student. This computation is also incorporated in the overall IP requirements formula.

In the example below, assume there are 5 students in a given training period with a given syllabus hours requirement of 1.3 hr and a student:IP ratio of 2:1. The example illustrates the process for forecasting aircraft IPs required for the training period.

1. The syllabus hours requirement of 1.3 hrs (as opposed to 0.7 or 0.8 for simulator syllabus hours requirements) defines an IP requirement for aircraft training.
2. The quantity of IPs is calculated by dividing the quantity of students by the student:IP ratio and then rounding up to the next integer ($5/2 = 2.5$ rounded up to 3).

Establish relationships among input data and aircraft requirements. The type of aircraft (slick or gunship) depends upon the phase of training. For the AQC, slicks are required during the transition phase (TD 1 through TD 14) and gunships are required for the remainder of the AQC. The aircraft type required in the MOI and IPC also depends on the training phase. The determination of the type of aircraft (in accordance with the phase of training) is incorporated in the overall aircraft requirements formulas.

Because the seating configuration of the AH-1S requires one IP per aircraft, the quantity of aircraft needed for a given flight period is the same as the quantity of aircraft IPs required. Thus, the quantity of gunships required for training

the 5 students in the previous example is determined in the following manner.

1. If AQC students are in the gunnery training phase (TD 15 or greater) and if the quantity of IPs needed for aircraft training equals three, then three gunships would be required.
2. If students are not in the gunnery training phase (TD 14 or less), no gunships would be required.

The same formula is also used to compute the quantity of slicks required during a training period.

Design

Establish structure of forecast matrix. A matrix divisible into a series of blocks, each representing one training day, was constructed. Table 1 depicts one block (26 May 1987). Note that all AQC, MOI, and IPC classes in session are represented in this block. The rows and columns that define the blocks' entries represent flight periods for each course in session, with respective entries for training day, phase of training, student load, and student syllabus hours. The data in the first five columns of the block, starting from the left, are entered by the user. The data in the next five columns represent the resource requirements which are computed from the formulas previously described.

Totals appear at the bottom of each block. The flight period totals represent summations of student load, daily syllabus hours, IP and aircraft requirements for Morning (Period 1), Afternoon (Period 2), and Night (Period 3) flight periods. The accumulation of totals for all three flight periods is depicted in the daily grand total on the bottom row.

Select software. A matrix format software was chosen because of its inherent applicability to forecasting, its capacity for rapid calculation of complex formulas, and its ease of use. This type of software package is ideally suited for establishing and manipulating tables of fixed and changing values. The choice of the specific software package³ for this application was based upon its capability to incorporate all anticipated functions, its ease of use, its familiarity to the user community, and its availability.

³ Symphony, Version 1.2, Copyright 1986, Lotus Development Corp., Cambridge, Massachusetts.

Table 1

Matrix Entries for 26 May 1987

26 MAY 1987 - Tuesday

Daily Ratio: # Students

for each IP: 2

	Training Day	Phase of Training	Student Load	Daily Syllabus Hrs./Student	Aircraft IPs Required	Simulator IPs Required	Other IPs Required	Slicks Required	Gunships Required
AQC 87-15(246)									
Period 1a	10	Transition	6	1.5	3	0	0	3	0
Period 1b	10	Transition	5	1.5	3	0	0	3	0
Period 2a	10	Transition	6	1.5	3	0	0	3	0
Period 2b	10	Transition	5	1.5	3	0	0	3	0
Period 3	10	Transition	0	0.0	0	0	0	0	0
AQC 87-14(245)									
Period 1a	20	Gunnery	6	1.3	3	0	0	0	3
Period 1b	20	Gunnery	5	1.3	3	0	0	0	3
Period 2a	20	Gunnery	6	1.3	3	0	0	0	3
Period 2b	20	Gunnery	5	1.3	3	0	0	0	3
Period 3	20	Gunnery	0	0.0	0	0	0	0	0
AQC 87-13(244)									
Period 1-AVTAC	30	Gunnery	11	1.3	6	0	0	0	6
Period 2-AVTAC	30	Gunnery	11	1.3	6	0	0	0	6
Period 3	30	Gunnery	0	0.0	0	0	0	0	0
MOI 87-6(597)	5	No Flights	4						
IPC 87-6(354)	5	til TD 8	8						
MOI 87-5(576)									
Period 1	32	Gunnery	0	0.0	0	0	0	0	0
Period 2	32	Gunnery	0	0.0	0	0	0	0	0
Period 3	32	Gunnery	4	1.3	2	0	0	0	2
IPC 87-5(353)									
Period 1	32	Gunnery	0	0.0	0	0	0	0	0
Period 2	32	Gunnery	0	0.0	0	0	0	0	0
Period 3	32	Gunnery	8	1.3	4	0	0	0	4

DAILY TOTALS - PERIOD 1			45	6.9	18	0	0	6	12
DAILY TOTALS - PERIOD 2			33	6.9	18	0	0	6	12
DAILY TOTALS - PERIOD 3			12	2.6	6	0	0	0	6
DAILY TOTALS - ALL PERIODS			90	16.4	42	0	0	12	30

Select hardware. An IBM-compatible microcomputer was used to implement the resource forecasting software. This choice was based upon the current availability of several IBM-compatible machines, the familiarity of the training staff with the use of these machines, and the availability of off-the-shelf software.

Development

Create forecast matrix. To build the matrix, specific conditions such as class numbers, TDs, training phases, student loads, and syllabus hours for an arbitrarily selected training day were entered. Next, appropriate formulas for calculating specific resource requirements such as type and quantity of IPs and aircraft were entered. Values for resource requirements are displayed for the selected day immediately upon entry of the formulas. These entries created the initial block from which all other blocks were built.

Expand forecast matrix. The formulas, which usually remain unchanged across all training days, were copied to a new block upon completion of entries for the selected training day. The specific conditions for the new training day were then entered. This procedure was repeated until all selected training days were entered. Occasionally, editing of formulas was necessary for blocks that changed significantly from one day to the next. These changes occurred when a new class was added to the matrix or a class completed a course and was removed from the matrix. The row/column coordinates of entries for new classes were added to all the formulas used to compute totals. Conversely, the row/column coordinates of entries for completed classes were removed from the formulas used to compute totals.

For example, Table 2, representing 28 May 1987, shows MOI Class 87-5 and IPC Class 87-5 nearing completion of their courses at training day 34. Student load, syllabus hours and resource requirements for these two classes are included in the daily totals listed at the bottom of the Table. Observe that MOI Class 87-6 and IPC 87-6 are in academic classes and require flightline resources only after training day 8. Thus, only the student load values for these two classes appear in the daily totals. Students in AQC Class 87-13 are in their final day of training and this student load is reflected in the daily totals.

Table 2, therefore, portrays eight classes in session simultaneously and the daily totals reflect the student load for all eight classes. The resources projected, however, are

Table 2

Matrix Entries for 28 May 1987

28 MAY 1987 - Thursday

Daily Ratio: # Students

for each IP: 2

	Training Day	Phase of Training	Student Load	Daily Syllabus Hrs./Student	Aircraft IPs Required	Simulator IPs Required	Other IPs Required	Slicks Required	Gunships Required
AQC 87-16(247)									
Period 1a	2	Transition	6	0.8	0	3	0	0	0
Period 1b	2	Transition	5	0.8	0	3	0	0	0
Period 2a	2	Transition	6	0.0	0	0	0	0	0
Period 2b	2	Transition	5	0.0	0	0	0	0	0
Period 3	2	Transition	0	0.0	0	0	0	0	0
AQC 87-15(246)									
Period 1a	12	Transition	6	1.5	3	0	0	3	0
Period 1b	12	Transition	5	1.5	3	0	0	3	0
Period 2a	12	Transition	6	1.5	3	0	0	3	0
Period 2b	12	Transition	5	1.5	3	0	0	3	0
Period 3	12	Transition	0	0.0	0	0	0	0	0
AQC 87-14(245)									
Period 1a	22	Gunnery	6	1.3	3	0	0	0	3
Period 1b	22	Gunnery	5	1.3	3	0	0	0	3
Period 2a	22	Gunnery	6	0.8	0	3	0	0	0
Period 2b	22	Gunnery	5	0.8	0	3	0	0	0
Period 3	22	Gunnery	0	0.0	0	0	0	0	0
AQC 87-13(244) 32 Outprocessing 22									
MOI 87-6(597)	7	No Flights	4						
IPC 87-6(354)	7	til TD 8	8						
MOI 87-5(596)									
Period 1	34	Gunnery	0	0.0	0	0	0	0	0
Period 2	34	Gunnery	4	1.5	2	0	0	0	2
Period 3	34	Gunnery	0	0.0	0	0	0	0	0
IPC 87-5(353)									
Period 1	34	Gunnery	0	0.0	0	0	0	0	0
Period 2	34	Gunnery	8	1.5	4	0	0	0	4
Period 3	34	Gunnery	0	0.0	0	0	0	0	0

DAILY TOTALS - PERIOD 1			56	7.2	12	6	0	6	6
DAILY TOTALS - PERIOD 2			56	7.6	12	6	0	6	6
DAILY TOTALS - PERIOD 3			0	0.0	0	0	0	0	0
DAILY TOTALS - ALL PERIODS			112	14.8	24	12	0	12	12

only for those classes in the gunnery or transition phases of training.

Table 3, however, shows MOI 87-5, IPC 87-5, and AQC 87-13 removed and MOI 87-6 and IPC 87-6 incorporated to reflect the resources used on training day 8. The formulas for calculating daily totals have been adjusted to reflect these changes.

Implementation

Employ forecast matrix. Daily training requirements for all AQC, IPC and MOI classes in session on 1 January 1987 were obtained from current POIs, FTGs, and master scheduling sheets and entered as values into the initial block of the matrix. The appropriate formulas to calculate resource requirements were incorporated into this beginning block. Subsequent training days through 30 June 1987 were appended to the matrix, one day (block) at a time, by entering the values for the class number, the training day, the phase of training, the student load, student:IP ratio, and the syllabus hours requirement. After the values for each day were entered into the matrix, the formulas for calculating aircraft and personnel were copied from the beginning block to the next day's block and from that block to the next. Aircraft and personnel requirements were automatically calculated upon entry of these formulas.

Verify forecast matrix. To ensure that the matrix correctly portrayed existing flightline training schedules, flight operations personnel were asked to review its format and each of the resource calculation formulas. Two changes were suggested:

- o Inclusion of calculations for personnel assigned to nonflying tasks such as inprocessing (a student orientation period). These calculations were incorporated as "other IPs required."
- o Inclusion of rounding functions in the resource requirements formulas (described above) to accurately reflect the quantity of IPs and aircraft required for each class.

The completed resource forecasts were also reviewed by flight operations personnel for accuracy.

Table 3

Matrix Entries for 29 May 1987

29 MAY 1987 - Friday

Daily Ratio: # Students

for each IP: 2

	Training Day	Phase of Training	Student Load	Daily Syllabus Hrs./Student	Aircraft IPs Required	Simulator IPs Required	Other IPs Required	Slicks Required	Gunships Required
AQC 87-16(247)									
Period 1a	3	Transition	6	0.0	0	0	0	0	0
Period 1b	3	Transition	5	0.0	0	0	0	0	0
Period 2a	3	Transition	6	0.8	0	3	0	0	0
Period 2b	3	Transition	5	0.8	0	3	0	0	0
Period 3	3	Transition	0	0.0	0	0	0	0	0
AQC 87-15(246)									
Period 1a	13	Transition	6	1.5	3	0	0	3	0
Period 1b	13	Transition	5	1.5	3	0	0	3	0
Period 2a	13	Transition	6	1.5	3	0	0	3	0
Period 2b	13	Transition	5	1.5	3	0	0	3	0
Period 3	13	Transition	0	0.0	0	0	0	0	0
AQC 87-14(245)									
Period 1a	23	Gunnery	6	1.3	3	0	0	0	3
Period 1b	23	Gunnery	5	1.3	3	0	0	0	3
Period 2a	23	Gunnery	6	1.3	3	0	0	0	3
Period 2b	23	Gunnery	5	1.3	3	0	0	0	3
Period 3	23	Gunnery	0	0.0	0	0	0	0	0
MOI 87-6(597)									
Period 1	8	Transition	4	1.5	2	0	0	2	0
Period 2	8	Transition	0	0.0	0	0	0	0	0
Period 3	8	Transition	0	0.0	0	0	0	0	0
IPC 87-6(354)									
Period 1	8	Transition	8	1.5	4	0	0	4	0
Period 2	8	Transition	0	0.0	0	0	0	0	0
Period 3	8	Transition	0	0.0	0	0	0	0	0
DAILY TOTALS - PERIOD 1			45	8.6	18	0	0	12	6
DAILY TOTALS - PERIOD 2			33	7.2	12	6	0	6	6
DAILY TOTALS - PERIOD 3			0	0.0	0	0	0	0	0
DAILY TOTALS - ALL PERIODS			78	15.8	30	6	0	18	12

DISCUSSION

Use of Resource Forecasting Method

Flight training managers require rapid and exact methods to predict resource shortages and surpluses in a timely manner. Use of this program to quickly recalculate personnel and aircraft requirements as student load, student:IP ratio, training phase, or other training conditions change, will provide this predictive capability. On particularly heavy training days, the program could be used to substantiate management's requests to headquarters for increases in aircraft delivered or personnel allocated, or for reductions in student load.

An example of one such resource-intensive training day (27 May 1987) is depicted in Table 4. Under the column labeled Phase of Training, Gunnery entries indicate that four classes simultaneously compete for available gunships. Forty-two IPs, with a 2:1 student:IP ratio, are necessary to complete daily syllabus training hours in the aircraft, and an additional 12 IPs are needed to introduce new students to the AQC (see Daily Totals - All Periods). A maximum of 41 IPs are available on any given training day; IP groundings and illness usually result in a reduced daily availability level of 20 to 30 IPs. Twenty-four gunships are available on any given training day and maintenance problems typically reduce the daily availability of gunships to approximately 16.

The totals depicted on the bottom row of Table 4 show resources required for 27 May 1987 exceeded those normally available. Only one third to one half of the 54 IPs needed were available to fly training missions on this day. This IP shortage often results in reduced flight time for students.

Alternative Uses

Applicability to POI changes. An alternative application of the resource forecast matrix is to predict the impact of changes to AH-1S courses. Several possible changes have been considered which would significantly increase AH-1S student throughput. A matrix incorporating data from any proposed POI and flight training schedules would allow management to detect potential problems prior to implementing actual course changes.

Applicability to other courses. Other training courses at Fort Rucker, such as those for the AH-64 and the OH-58D, are encumbered by similar training resource shortages, and, therefore, also require a method to accurately forecast daily

Table 4
Matrix Entries for 27 May 1987

27 MAY 1987 - Wednesday

Daily Ratio: # Students

	for each IP: 2	Phase	Student	Daily	Aircraft	Simulator	Other	Slicks	Gunships
	Training	of	Load	Syllabus	IPs	IPs	IPs	Required	Required
	Day	Training		Hrs./Student	Required	Required	Required		
AQC 87-16(247)									
Period 1a	1	Inprocessing	6	0.0	0	0	3	0	0
Period 1b	1	Inprocessing	5	0.0	0	0	3	0	0
Period 2a	1	Inprocessing	6	0.0	0	0	3	0	0
Period 2b	1	Inprocessing	5	0.0	0	0	3	0	0
Period 3	1	Inprocessing	0	0.0	0	0	0	0	0
AQC 87-15(246)									
Period 1a	11	Transition	6	1.5	3	0	0	3	0
Period 1b	11	Transition	5	1.5	3	0	0	3	0
Period 2a	11	Transition	6	1.5	3	0	0	3	0
Period 2b	11	Transition	5	1.5	3	0	0	3	0
Period 3	11	Transition	0	0.0	0	0	0	0	0
AQC 87-14(245)									
Period 1a	21	Gunnery	0	0.0	0	0	0	0	0
Period 1b	21	Gunnery	0	0.0	0	0	0	0	0
Period 2a	21	Gunnery	6	1.3	3	0	0	0	3
Period 2b	21	Gunnery	5	1.3	3	0	0	0	3
Period 3	21	Gunnery	11	1.3	6	0	0	0	6
AQC 87-13(244)									
Period 1-AVTAC	31	Gunnery	11	1.3	6	0	0	0	6
Period 2-AVTAC	31	Gunnery	11	1.3	6	0	0	0	6
Period 3	31	Gunnery	0	0.0	0	0	0	0	0
MOI 87-6(597)	6	No Flights	4						
IPC 87-6(354)	6	til TD 8	8						
MOI 87-5(596)									
Period 1	33	Gunnery	0	0.0	0	0	0	0	0
Period 2	33	Gunnery	4	1.3	2	0	0	0	2
Period 3	33	Gunnery	0	0.0	0	0	0	0	0
IPC 87-5(353)									
Period 1	33	Gunnery	0	0.0	0	0	0	0	0
Period 2	33	Gunnery	8	1.3	4	0	0	0	4
Period 3	33	Gunnery	0	0.0	0	0	0	0	0

DAILY TOTALS - PERIOD 1			45	4.3	12	0	6	6	6
DAILY TOTALS - PERIOD 2			56	9.5	24	0	6	6	18
DAILY TOTALS - PERIOD 3			11	1.3	6	0	0	0	6
DAILY TOTALS - ALL PERIODS			112	15.1	42	0	12	12	30

training requirements. The resource forecasting matrix is readily adaptable to those courses.

Enhancements

Alterations will be made in the format of the matrix to facilitate revision of blocks by users. To prevent users from modifying certain formulas, protection schemes will be assigned to specific areas of the matrix.

Plans are underway to expand this matrix to include blocks for each calendar day of the year. This expansion will allow examination of additional factors affecting resource consumption such as weekend makeup flights.

Summary

The training resource forecast matrix was developed to provide flight training managers with a technique to support resource management decisions. The program provides daily requirements forecasts for personnel and aircraft. It may also be used to evaluate the effects on resource requirements when changes in aviator courses are made such as increases or decreases in student load, changes in class frequency, increases or decreases in resource allocation, or changes in student:IP ratio.

REFERENCES

Flight Training Guide for AH-1S Aviator Qualification Course (October, 1985.) A Company, 7th Aviation Training Battalion, Fort Rucker, AL: U.S. Army Aviation Center.

Flight Training Guide for AH-1S Instructor Pilot Course (August, 1986.) A Company, 7th Aviation Training Battalion, Fort Rucker, AL: U.S. Army Aviation Center.

Program of Instruction, AH-1S Aviator Qualification Course effective 1 October 1985, (2C-ASI-1M/2C-100E.) Aviation Training Brigade, Fort Rucker, AL: U.S. Army Aviation Center.

Master Scheduling Sheet, United States Army Aviation Center Form 138 for AH-1S, for POI effective 1 October 1985. A Company, 7th Aviation Training Battalion, Fort Rucker, AL: U.S. Army Aviation Center.

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